NEWS REPORT

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NATIONAL RESEARCH COUNCIL

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NEWS REPORT

National Academy of Sciences *National Research Council*

VOLUME VI *September–October 1956* NUMBER 5

The United States Arctic Program For The International Geophysical Year

JOSEPH KAPLAN, *Chairman*

United States National Committee, International Geophysical Year

AS PART of the United States participation in the International Geophysical Year, 1957–58, a comprehensive program of Arctic observations and measurements is being planned by the United States National Committee at stations in Alaska, Canada, and on the drifting Arctic ice pack. Scientists will focus their attention on a wide variety of geophysical studies, which will be correlated with observations from the Antarctic and other parts of the world. The comprehensive program includes studies of aurora and cosmic rays, geomagnetism, glaciology, gravity and ionospheric physics, meteorology and oceanography, seismology, radio noises and solar activity.

In Alaska the United States program is designed to insure adequate coverage of the electromagnetic disciplines. Two glaciological stations will furnish valuable data on existing quantities of snow and ice and will help augment present knowledge of snow and ice mechanics. A number of existing meteorological stations will supply synoptic weather data throughout the International Geophysical Year. Oceanographic studies will be conducted in the Gulf of Alaska and at Point Barrow and Barter Island.

In Canada the joint operation of meteorological and ionospheric stations will continue. Cooperative rocket launchings will be made from Churchill and Frobisher Bay and will be part of a worldwide network. The rocket program includes geomagnetic, auroral, and cosmic ray studies.

At the two drifting stations on the Arctic ice pack extensive oceanographic, glaciological, and meteorological programs are scheduled as well as auroral, ionospheric, and gravity observations. A reconnaissance flight will be made in October, and the final establishment of these two drifting stations will be effected in 1957.

Aurora. Studies of polar aurora are an important part of the National Committee's program. In order to locate the aurora in space at specified times, the preparation of synoptic auroral maps is an important objective. To resolve the question of the existence of an inner auroral zone, its location, frequency of occurrence and relationship to the primary auroral zone, circumpolar observations within the primary zone itself are required. A network of all-sky

cameras at Point Barrow and College, Alaska, and probably at Barter Island, Fort Yukon, Kotzebue, and Naknek as well, will make observations to aid in establishing the position of the principal auroral zone during the period of sunspot maximum. All-sky camera observations from the cooperative station at Sachs Harbor, from Thule, and from the two drifting stations will furnish data on the occurrence of aurora well within the principal zone; and during winter observations may be made continuously for several months.

In addition, visual observations from auxiliary stations in Alaska and from aircraft will provide an important supplement to the all-sky camera photographs, particularly in the geomagnetic latitude zone of 45°–60° N. Trained observers employing alidades and azimuth circles will code their observations on mark-sense and diagram punch cards. Observations will be oriented with respect to the magnetic meridian through each station. Also an extensive series of spectrographs of high and low dispersion will be obtained.

Rocket-borne equipment will observe aurora in the high Arctic atmosphere. Canada and the United States are jointly establishing a permanent rocket launching site at Churchill. Valuable investigations will be made during auroral displays when the rocket is launched into different auroral forms or when a rocket is launched north or south of an aurora. Simultaneously, measurements will be attempted at lower altitude launching sites. Direct measurements of the auroral radiations in situ can provide unambiguous information on the altitudes of different emissions. Subsequent comparison of the spectra obtained from rockets and from the ground may provide an indication of the atmospheric attenuation for given spectral features.

Cosmic rays. Cosmic ray studies will form an integral portion of the United States Arctic program. The work will be conducted jointly with Canada at Churchill and aboard ship in the water off Greenland. Present plans call for rocket-borne ionization chamber measurements from Davis Strait in conjunction with balloon and surface observations from the same site. High altitude cosmic ray measurements by small rockets, or rockoons, launched from a ship close to the geomagnetic pole will provide new data on the type and character of very low energy primary particles as well as total cosmic ray intensity above the atmosphere. Magnetometer measurements of atmospheric currents and auroral studies of soft radiation above 50 kilometers will be included in the shipboard program. From the rocket experiments at Churchill, some indication of the special extent of cosmic ray bursts may be obtained.

Geomagnetism. Surface measurements of the geomagnetic elements using normal and high-speed recordings will also be emphasized in the Arctic program. Visual recording systems will be installed for use as a warning system in the programs for ionospheric physics and aurora. Identical magnetic equipment will be used at all Arctic and Antarctic stations to permit reliable comparative studies, especially on the simultaneity of geomagnetic phenomena.

Permanent observatories equipped with standard speed recorders are already in existence at Point Barrow, College, and Sitka, where rapid-run magnetographs will be installed. Visual magnetic variometers will also be utilized at Point Barrow, College, and Thule. In addition to the permanent observatories, fully equipped observatories will be established at Big Delta and Healy, and standard speed and rapid-run recorders will be operated. Askania variometers will be located at Anchorage, Barter Island, drifting station A, Kotzebue, Northway, and Fort Yukon. Rocket-borne magnetometers will be flown through the E region (60–90 miles above the earth) to locate and measure directly the magnitude of electrical currents in the ionosphere. Such flights will be made from Churchill and from a ship in the sub-Arctic.

Glaciology. The principal objectives of the National Committee's glaciology program in the Arctic are are follows:

1) To determine—

a) whether the Arctic sea ice is at present growing or shrinking in thickness,

b) which fluctuating meteorological or oceanographic factors can account for

long-time and/or short-time fluctuations in thickness and extent of Arctic pack ice, and

c) the effect of the ice pack on the surface thermal energy exchange in the Arctic as contrasted with the surface thermal energy exchange which would occur if the ice pack were absent;

2) to determine the present pattern and extent of growth or shrinkage of glaciers in Alaska and the relation of this glacial activity to present climatic conditions; and

3) to reconstruct the history of post-Wisconsin glacial fluctuations in Alaska and associated climatic fluctuations.

At the drifting stations, the glaciological program will involve measurement of the annual mass budget of Arctic sea ice and its relation to total accumulation and ablation at the ice-ocean and ice-atmosphere interfaces respectively. A determination will be made of the annual thermal regimen of the Arctic sea ice and its relation to net energy exchange across the interfaces. The respective roles of short- and long-wave radiation will be determined as well as the thermal energy of accumulation, condensation, sublimation, and evaporation; the molecular conduction of heat; and the turbulent transfer of heat in the energy exchange across the interfaces.

Gravity. Gravity pendulum measurements will be made at Point Barrow, Barter Island, and Thule. Joint operations with other countries will allow a series of pendulum measurements to be taken at Alert, Eureka, Mould Bay, and Resolute Bay in the Queen Elizabeth II Islands; and at Bodö, Hammerfest, and Spitzbergen. To supplement the pendulum survey of the Arctic, gravimeter observations will be made at Point Barrow, both drifting stations, and Thule.

Ionospheric physics. Sweep-frequency vertical incidence soundings, back-scatter measurements, radio noise recordings, absorption measurements, and recordings of audio atmospherics ("whistlers") will comprise the Arctic program in ionospheric physics. For the vertical incidence soundings standard ionospheric sweep-frequency (1–25 megacycles per 15 seconds) equipment will be used periodically throughout the day. These observations normally will provide the usual frequency-virtual height traces at 15-minute intervals. Recordings may be speeded up to one per 15 seconds and probably will be made at this speed during World Days and /or Special World Intervals. The existing net of vertical incidence stations will be augmented by an installation at drifting station A. Twelve flights, probably from Thule, are planned with an airborne vertical incidence ionospheric sounder and will include traverses between several pairs of sounding stations within the auroral zone. Observations will be made four or more times per minute. The operating characteristics of the sounder are equivalent, except for antenna gain, to those of other United States vertical incidence sounding stations.

Measurements of radio noise levels will be made at Thule, an area relatively free from man-made noise. These will be compared with similar measurements in Antarctica by which it is hoped an integrated polar noise pattern over the globe will be obtained. Determination of ionospheric absorption will be obtained through a study of cosmic radio wave emissions recorded at Anchorage, Barter Island, College, Fort Yukon, Naknek, Sitka, and Unalaska. Scatter soundings which provide some indication of the characteristics of the ionosphere at appreciable distances from the actual stations will be made at several sites. Sensitive receiving apparatus will be employed in the audio range to record whistlers and "swishes" which are known to correlate with electric discharges in the atmosphere.

Meteorology. Both surface and upper-air meteorological observations are planned for the Arctic. Besides the group of Alaskan stations, several others will be operated in cooperation with other nations. Most United States and cooperative meteorological stations will conduct the following series of observations:

a) Continuous recordings of surface temperature, humidity, pressure, amount of precipitation, wind direction and speed, and duration of sunshine;

b) solar radiation (direct and diffuse) received on a horizontal surface (at selected stations);
c) pilot balloon observations as needed;
d) three-hour standard meteorological surface observations; and
e) 12-hour rawinsonde observations up to 100,000 feet, including determination of temperature, humidity, and pressure.

The observations made at the drifting stations on the Arctic ice pack will complete the pole-to-pole meteorological network along 70°–80° W. longitude.

Oceanography. The oceanographic program for the Arctic will continue the tide gauge studies at Point Barrow, Barter Island, and Thule. In addition a considerable amount of research will be conducted at the two drifting stations. From these sites data on the current flow, temperature, and salinity of ocean water at various depths will be periodically determined. Age determinations, employing radioactive tritium and carbon-14 techniques, will be made on water samples obtained from different depths. Later the data may be utilized to provide information on the rate of water-mass circulation. Examination of bottom cores will allow a direct comparison of Arctic Ocean sedimentation, stratigraphy, and marine life with that obtained in other oceans. It will also provide information bearing on the role of the Arctic Ocean during past geologic time and will furnish data on the formation of the ocean itself. Long-period ocean waves and sea level changes will be studied at Point Barrow and in the Gulf of Alaska using Van Dorm recorders.

As part of the broad program of international cooperation, the United States recently agreed to cooperative USA–USSR flights over the Arctic Ocean to study the snow and ice cover in the Arctic Basin. This joint operation will permit more data to be gathered on the dynamics of the movement of ice in the Arctic Ocean and thus provide scientific knowledge of value to all nations. It has been suggested that the American terminal for the flights be Nome, Alaska, and the Soviet, Murmansk.

Seismology. Arctic seismic stations will assist in the global study of earthquakes, earth structure investigations, and microseismic analyses. The United States National Committee will establish a seismograph station at Thule in an effort to reduce the serious deficiency of seismic observations in north polar regions. Another seismograph station will be located at Resolute in cooperation with the Canadians. The cooperative establishment of a third station is planned at either Uppsala, Sweden, or Frankfurt, Germany. The stations will record earthquake waves in order to obtain the seismicity of the Arctic, to locate earthquake sources more precisely, and to determine the interrelationships among microseisms, meteorology, and oceanic conditions in the Arctic.

Solar activity. To take advantage of the long polar summer days a solar radio noise patrol on 200 megacycles will be maintained from a high latitude station. Tentative plans call for the operation of a 200-megacycle radiometer at College, probably employing dipole arrays. At low solar angles the patrol will concentrate principally on bursts and noise storms. Indirect flare detectors to determine sudden cosmic noise absorption will also be in operation at College, and perhaps at other locations, utilizing equipment in operation for the ionospheric absorption measurements. As an additional activity during the IGY, solar infrared absorption measurements will be made at Thule during the long daylight hours.

SCIENCE NEWS

AUTUMN MEETING NATIONAL ACADEMY OF SCIENCES

The autumn meeting of the National Academy of Sciences will be held in Washington, D. C., November 8–10. The scientific institutions of Washington and vicinity will be hosts to the Academy and have arranged interesting tours that will enable the members to observe and acquaint themselves with the facilities and activities of the institutions. The Committee on Arrangements has scheduled concurrent sessions of scientific papers at the institutions visited so that various branches of science will be represented each day.

On Thursday, November 8, the members will meet at the National Bureau of Standards in the morning and at the National Institutes of Health for luncheon and the afternoon program. In the evening the public lecture will be given by Caryl P. Haskins, President of the Carnegie Institution of Washington, in the auditorium of the Institution.

A visit to the Agricultural Research Center at Beltsville, Md., is scheduled for the morning of November 9, followed by luncheon and an afternoon session at the University of Maryland. Dinner in the Great Hall of the Smithsonian Institution will be the evening feature.

A short business session, as well as scientific sessions, will be held at the Academy Building on Saturday, November 10.

Hugh L. Dryden, Home Secretary of the Academy, is serving as Chairman of the Committee on Arrangements and Wallace R. Brode, National Bureau of Standards, is Vice Chairman. The other members of the committee are:

Leonard Carmichael, Smithsonian Institution
Ross Gunn, U. S. Weather Bureau
Sterling B. Hendricks, Plant Industry Station, Beltsville, Md.
Thomas B. Nolan, U. S. Geological Survey
Ralph W. G. Wyckoff, Laboratory of Physical Biology, National Institutes of Health

SOVIET INSTITUTE OF SCIENTIFIC AND TECHNICAL INFORMATION

Dr. D. Yu Panov, Director of the All-Union Institute of Scientific and Technical Information of the U.S.S.R. Academy of Sciences, described the work of his Institute in a lecture delivered at the Academy–Research Council on September 19. Dr. Panov visited Washington as a guest of the Planning Committee of the International Conference on Scientific Information, which is being arranged and sponsored by the National Science Foundation, the National Academy of Sciences–National Research Council, and the American Documentation Institute.

Dr. Panov, who visited the United States to attend a symposium on information theory at the Massachusetts Institute of Technology, was accompanied by Dr. V. I. Siforov, a corresponding member of the Soviet Academy of Sciences and President of the Scientific and Technical Society of Radio and Electrical Communication Engineering of the U.S.S.R.

Dr. Panov said the work of the Institute concerns primarily abstracting and disseminating scientific information, but it is also concerned with research on the organization of scientific information, mechanical systems for storing and retrieving information, mechanical translation, etc. The Institute, which was established by the Soviet Academy of Sciences in 1952, now issues 13 abstract journals covering all fields of science and technology. Russian and non-Russian periodical titles numbering some 10,000 are currently abstracted in Russian, and in the current year Dr. Panov expects to produce about 400,000 abstracts.

To carry on this work, the Institute staff numbers more than 1,800 specialists, and in addition the Institute calls upon the services of more than 13,000 Soviet scientists who have agreed to prepare abstracts in their special fields.

In addition to publication of abstract

journals, the Institute has undertaken to publish 20 series of "Express Information" in various fields of science and technology. The articles are set in type, printed, and distributed individually to subscribers within two or three weeks from the date of receipt.

In the field of mechanical translation, Dr. Panov described the experimental translation of Milne's *Numerical Solution of Differential Equations* from English into Russian, which will be described in detail at an international conference on mechanical translation to be held October 17–20 at the Massachusetts Institute of Technology.

In closing Dr. Panov commented upon the close similarity of the problems faced in the organization of scientific information in the U.S.S.R. and the United States. He remarked that much remains to be done and that international cooperation such as afforded by his visit and the Conference on Scientific Information being planned in this country for 1958 will hasten the day when our problems may largely be solved.

EIGHTEENTH INTERNATIONAL GEOGRAPHICAL CONGRESS

More than 1,000 geographers representing 50 nations attended the Ninth General Assembly and 18th Congress of the International Geographical Union held at Rio de Janeiro, August 9–18. The United States was represented by delegations appointed by the U. S. Department of State and the Academy–Research Council (*see* NEWS REPORT, Vol. VI, No. 4, p. 63).

Nearly eighty geographers from the United States journeyed to Rio de Janeiro to take part in the Congress program and to visit many parts of Brazil as members of excursions arranged by the Brazilian National Committee of the Union. The cordial hospitality extended by the Brazilian hosts and the many stimulating discussions in the Section and Commission meetings and in the hallways and lounges will long be remembered. It was an occasion for the free exchange of information and ideas concerning the many topics of interest to geographers.

The General Assembly of the International Geographical Union met twice during the Congress period. At these sessions the business of the Union was transacted. Among the actions taken by the General Assembly were the following:

1) Elected the following officers to serve for the ensuing 4-year period:

HANS W:SON AHLMANN (Sweden), *President*

HASSÂN AWAD (Egypt), *Vice-President*

CHAUNCY D. HARRIS (United States), *Vice-President*

MAXIMILIEN SORRE (France), *Vice-President*

L. DUDLEY STAMP (United Kingdom), *Vice-President*

HILGARD O'REILLY STERNBERG (Brazil), *Vice-President*

FUMIO TADA (Japan), *Vice-President*

CARL TROLL (Germany), *Vice-President*

HANS BOESCH (Switzerland), *Secretary-Treasurer*

2) Accepted the invitation extended jointly by Sweden, Norway, Denmark, Finland, and Iceland to hold the Tenth General Assembly and 19th Congress of the Union in Stockholm and other Scandinavian cities in 1960.

3) Approved the establishment of a new category of membership to be known as *Associate*. Countries with a small number of geographers may seek admission under this category, but they shall have no vote on administrative matters in the General Assembly.

4) Voted to admit the following countries as regular members of the Union: Ethiopia, Hungary, Iceland, and the U.S.S.R.

5) Voted to admit the following as associate members: French West Africa, Iraq, Government of Kenya Colony and Protectorate, Nigeria, Sudan, and Uganda.

6) Approved a proposal by the President of the Union that a statutes committee be appointed to examine the statutes of the Union and to make recommendations for revisions.

7) Approved the continuation of the following Commissions: *a*) Arid Zone, *b*) Bibliography of Ancient Maps, *c*) Library Classification of Geographical Books and Maps, *d*) Coastal Sedimentation, *e*) Evolution of Slopes, *f*) Inventory of World Land Use, *g*) Karst Phenomena, *h*) Medical Geography, *i*) Periglacial Morphology, *j*) Study and Correlation of Erosion Surfaces around the Atlantic, and *k*) Teaching of Geography.

8) Approved the establishment of the following new commissions: National Atlases and Applied Geomorphology.

9) Approved the establishment of the following special commissions: Humid Tropics and World Population Mapping.

TENTH INTERNATIONAL CONGRESS OF ENTOMOLOGY

Those who attended the Tenth International Congress of Entomology in Montreal, Canada, August 17–25, seemed to agree that perfection had been closely approached by their Canadian hosts in arrangements for scientific and social meetings.

The scientific meetings were divided into 13 sections as follows: systematics; morphology and anatomy; physiology and toxicology; behavior, including social insects; ecology; geographical distribution; genetics, cytology and biometrics; agricultural entomology; forest entomology; medical and veterinary entomology; stored products entomology; biological control; and apiculture. Five and one-half days were devoted to scientific meetings, two days to trips to Quebec and Ottawa, and one afternoon to the opening ceremonies of the Congress. These ceremonies and the first two days of scientific meetings were held on the campus of McGill University near the center of Montreal. The last three and one-half days of scientific meetings took place in the impressive building of the University of Montreal on Mount Royal.

The largest number of papers was given by entomologists from the United States, with the Canadians not far behind. The United Kingdom and her colonies had the largest representation from overseas, followed by France, West Germany, and the Netherlands. Few countries in the world were missing from the program. The Soviet Union was represented by a seven-man delegation. However, a book containing the contributions of the U.S.S.R. to the Congress, with an introduction in English, was presented to a limited number of Congress participants.

High among the social events of the Congress, which are so very important for the establishment of international understanding and good will, were the social contacts made on the Mall of the McGill campus. Folding tables and chairs were set up on the lawn under tall, old trees and next to a marquee, where one could obtain light refreshments. As the weather was fine, many a friend was met and some must have been made in this delightful spot. There were numerous organized social events also: the reception for all Congress participants at the Châlet on Mount Royal commanding a wonderful view over the city and the St. Lawrence River beyond, smokers for smaller groups of entomologists, a banquet for the whole Congress, various trips for the ladies, and post-Congress collecting and inspection trips for entomologists.

The Academy–Research Council was represented at the Congress by the following delegation:

RAIMON L. BEARD, Connecticut Agricultural Experiment Station
GEORGE C. DECKER, Illinois State Natural History Survey
ASHLEY B. GURNEY, U. S. National Museum
DALE W. JENKINS, Chemical Corps, U. S. Army
FLOYD F. SMITH, Agricultural Research Service, U. S. Department of Agriculture

HANDBOOK OF BIOLOGICAL DATA

The Division of Biology and Agriculture has announced the completion of the manuscript for the *Handbook of Biological Data* which has been in preparation for the past seven years. The Handbook, which will appear this fall, contains about 446,000 values furnished and authenticated by 4,043 principal contributors and reviewers. These represent only a small part of the data in the files of the Handbook office, data that the Committee on the Handbook believed to be of most general interest and usefulness. It is estimated that 17,000 scientists have aided the staff of the Handbook, as contributors, reviewers, appraisers, or advisers. Tens of thousands of man-hours of work were done for the benefit of biology without monetary compensation. Thanks to the help of biologists everywhere and the support of seven government agencies, the handbook is now a reality.

The work of the Handbook office is not finished, however. Much of the unpublished data remains to be exploited in the form of fascicles similar to those entitled *Standard Values in Blood, Standard Values in Nutrition and Metabolism,* and *Handbook of Toxicology, Volume I,* which have already appeared.

CONFERENCE ON MULTICHANNEL PULSE HEIGHT ANALYZERS

The new developments in multichannel pulse height analyzers were the subjects under discussion at an invitational conference held at Gatlinburg, Tenn., September 26–28. The conference was sponsored by the U. S. Atomic Energy Commission and the Academy–Research Council with the assistance of the U. S. Air Force Office of Scientific Research and the Office of Naval Research. Plans for the meeting were carried out by W. A. Higinbotham of Brookhaven National Laboratory and C. J. Borkowski, A. H. Snell, and K. Z. Morgan, all of Oak Ridge National Laboratory, under the direction of the Subcommittee of Instruments and Techniques of the Committee on Nuclear Science.

The invitation list of 37 persons included a number of distinguished foreign scientists as well as those actively engaged in this field in the United States. Among the foreign participants E. H. Cooke-Yarborough of the Atomic Energy Research Establishment at Harwell, England; E. Gatti of the Centro Informazioni Studi Esperienze, Milano, Italy; Daniel Maeder of the Physikalische Institut der Eidgenossischen Technischen Hochschule at Zurich, Switzerland; and Jacques Mey of the Centre d'Etudes Nucleaires de Saclay, Commissariat à l'Energie Atomique, France, were invited to deliver invitational papers on the developments in their own countries. Informal discussions followed the invited talks. The complete proceedings of the conference will be published by the Academy–Research Council.

SYMPOSIUM ON NAVAL HYDRODYNAMICS

The first Symposium on Naval Hydrodynamics, sponsored jointly by the Office of Naval Research and the National Academy of Sciences–National Research Council, was held in Washington, September 24–28. Over 300 scientists from abroad and from throughout the United States attended.

Rear Admiral R. Bennett, U. S. Navy, Chief of Naval Research, welcomed the participants, and Admiral A. G. Mumma, U. S. Navy, Chief of the U. S. Bureau of Ships, served as toastmaster at the symposium banquet at which L. M. Milne-Thomson, C. B. E., visiting professor at Brown University, spoke on "Some Problems and Methods in Hydrodynamics."

A group of the visitors were guests of Capt. E. A. Wright, U. S. Navy, Director of the David Taylor Model Basin at Carderock, Md., and of Capt. W. W. Wilbourne, Commander of the U. S. Naval Ordnance Laboratory at White Oak, Md., during a tour of both naval installations.

Seven sessions, which were open to the scientific public, covered 15 subjects in the field of hydrodynamics and provided opportunity for discussions from the floor. The proceedings of the symposium will be published by the Academy-Research Council in the near future.

INTERNATIONAL UNION FOR THE PROTECTION OF NATURE

The Fifth General Assembly of the International Union for the Protection of Nature was held in Edinburgh from June 20 to 28. This was the largest meeting in the history of the Union and included delegates and observers from 40 countries and 8 international organizations. There were 15 participants from the United States.

The Nature Protection Commission of the Soviet Academy of Sciences was among the 22 new member organizations added to the 200 that already belong to the Union. The Soviet observers presented detailed reports on forestry, nature reserves, and wildlife in the U.S.S.R. and asked for a pooling of knowledge and research on bird migration with other countries.

The four technical meetings discussed management of nature reserves on the basis of modern scientific knowledge, rehabilitation of areas biologically devastated by human disturbance, the relationship of ecology to landscape planning, and biological effects of the recent spread of myxomatosis among rabbits. The impact of myxomatosis on the rabbit populations of Europe and Australia is an event of major ecological significance, and the Assembly recommended that all countries concerned should pursue long-term studies of this problem.

The Commissions on Public Information, Education in Conservation, Survival Service, and Ecology made their reports and recommended programs for the next two-year period.

Among decisions made by the Assembly was the change of name to International Union for the Conservation of Nature and Natural Resources which more truly expresses the Union's activities. The Finance Committee proposed that a quota system of support be applied to each participating country in hopes that an annual amount of $50,000 required for the administrative budget might be assured by February 1957 for a 3-year period. The Executive Board of the Union accepted an invitation to hold the next General Assembly in Athens and Delphi in 1958.

The meetings were followed by a series of excursions to various parts of the Scottish Highlands, where impressive examples of nature conservation were seen.

The following officers and members of the executive board will serve for the next two years:

ROGER HEIM (France), Paris Museum of Natural History, *President*
ENRIQUE BELTRAN (Mexico), Mexican Institute of Renewable Natural Resources, *Vice-president*
LORD HURCOMB (Great Britain) President of the Society for Promotion of Nature Reserves, *Vice-president*
VICTOR VAN STRAELEN (Belgium), Institut des Parcs Nationaux du Congo belge, *Vice-president*
TRACY PHILLIPS (Great Britain) 31 rue Vautier, Brussels, Belgium, *Secretary-General*

Executive Board:

JEAN G. BAER (Switzerland), Zoological Institute, University of Neuchâtel
BOJE BENZON (Denmark), International Committee for Bird Preservation
K. CURRY-LINDAHL (Sweden), Nordiska museet et Skansen
ABBÉ OVILA FOURNIER (Canada), Montreal
IRA N. GABRIELSON (United States), President of Wildlife Management Institute
HELMUT GAMS (Austria), Botanical Institute, University of Innsbruch
R. KNOBEL (Union of South Africa), Director of South African National Parks
THEODORE MONOD (France), Paris Museum of Natural History
PETER SCOTT (Great Britain), Director of Wildfowl Trust
H. R. H. PRINCE TUPOUTO'A-TUNGI, C. B. E., Premier of Tonga
RICHARD W. WESTWOOD (United States), President of American Nature Association

INTERNATIONAL GEOLOGICAL CONGRESS

The 20th International Geological Congress was held in Mexico City, September 4–11. The United States delegation appointed by the Department of State consisted of the following members:

FELIX E. WORMSER, Department of Interior, *Chairman*
WILLIAM D. JOHNSTON, JR., U. S. Geological Survey, *Secretary*
A. RODGER DENISON, Amerada Petroleum Company
JOSEPH L. GILLSON, E. I. du Pont de Nemours and Company, Inc.
HARRY H. HESS, Princeton University
MORRIS M. LEIGHTON, formerly Chief, Illinois Geological Survey
THOMAS S. LOVERING, U. S. Geological Survey
THOMAS H. MILLER, U. S. Bureau of Mines
HENRYK B. STENZEL, University of Houston

The Division of Earth Sciences of the Academy–Research Council was represented by the following delegates appointed by the President of the Academy: Harry H. Hess, Chairman of the Division of Earth Sciences, and William R. Thurston, Executive Secretary of the Division.

More than 3,000 geologists registered at the Congress and the total attendance, including families and guests, was close to 5,000. Eight of the geologists present had attended the Tenth Congress which was held in Mexico City in 1906.

During the six days of meetings, 16 technical sections held about 80 sessions, 5 symposia were conducted in about 30 sessions, and 12 international commissions met in about 45 sessions. There were several special-purpose gatherings, such as the group that met with the Russian delegates to arrange for the purchase and exchange of geological publications and the delegates of Spanish-speaking countries who agreed to prepare an international glossary of geological terms used throughout the Spanish-speaking world including the Philippines.

Many of the participants took the opportunity afforded by the Congress to study outstanding geological localities and mining districts in Mexico. A total of 32 field excursions, ranging from 4 to 11 days in length, were conducted before and after the meetings, and 8 short excursions were held during the Congress.

A new Geologic Map of Mexico was compiled and published at a scale of 1 : 2,000,000 especially for the Congress by Petroles Mexicanos in collaboration with a number of geological organizations in Mexico and the U. S. Geological Survey. The Geological Institute of Poland distributed its new Geologic Atlas in five sheets on a scale of 1 : 2,000,000.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES

The Fifth International Congress of Anthropological and Ethnological Sciences was held at Philadelphia, September 1–9. The Congress was sponsored by the American Anthropological Association and the Committee on International Relations of the Division of Anthropology and Psychology. Financial support was provided by the Government, private foundations and associations, and educational institutions. The Committee on International Relations under the chairmanship of Froehlich G. Rainey, Director of the University of Pennsylvania Museum, served as the organizing committee for the Congress. Dr. Rainey also served as President of the Congress. Alfred V. Kidder, II, also of the University of Pennsylvania Museum, was chairman of the Local Arrangements Committee.

The morning and afternoon sessions were generally devoted to concurrent sectional meetings covering physical anthropology, new world archaeology, ethnography, acculturation, ethnology, race and human evolution, diffusion and ethnohistory, social organization, prehistory, applied anthropology, and other highly specialized fields. There were three general sessions devoted to ethnology, physical anthropology, and prehistory respectively, and a symposium on "Theory of Types in Anthropology." Another special feature consisted of three evening programs of anthropological films and ethnographic music.

Attendance at the Congress was gratifying in that the 636 persons participating represented 63 countries. Among the participants were delegates from 243 scientific institutions and organizations. The National Academy of Sciences–National Research Council was represented by the following delegation:

A. L. Kroeber, University of California at Berkeley, *Chairman*
Carleton S. Coon, University of Pennsylvania Museum
A. I. Hallowell, University of Pennsylvania
Emil Haury, University of Arizona
Clyde K. M. Kluckhohn, Harvard University
S. K. Lothrop, Peabody Museum, Harvard University
F. H. H. Roberts, Smithsonian Institution
H. L. Shapiro, American Museum of Natural History

In the general session on the International Union of Anthropological and Ethnological Sciences, held on Saturday morning, September 8, it was decided to hold the next congress in Paris in 1960.

RESEARCH ASSOCIATESHIPS IN MATHEMATICS

The Committee on Mathematics Advisory to the Office of Naval Research (ONR) announces that a small number of special postdoctoral associateships for research in pure mathematics will be offered during the academic year 1957–58 through contracts with ONR at selected universities. Upon the recommendation of the Committee, the following universities have been invited to participate in this program:

Brown University
Columbia University
Cornell University
University of Illinois
Johns Hopkins University
University of Michigan
Northwestern University
Tulane University
University of Virginia
University of Washington
University of Wisconsin
Yale University

Appointments carry a salary of $5,000 for the academic year and an allowance for incidental expenses, including travel. Applications for 1957–58 must be submitted by January 1, 1957, and the awards will be announced in April. Application forms and additional information may be obtained from Arthur Grad, Head, Mathematics Branch, Office of Naval Research, Washington 25, D. C.

COMMITTEE ON UNDERSEA WARFARE

The summer study organized by the Committee on Undersea Warfare at the request of Adm. Arleigh Burke, U. S. Navy, and previously reported in NEWS REPORT (Vol. VI, No. 3, p. 44), has now been successfully concluded. For approximately three months, the deliberations of the selected group of approximately 60 scientists and naval civilians and officers were carried on in Woods Hole, Mass., at a waterfront estate leased by the Academy and temporarily converted into the necessary office and conference room space.

The results of the study are concerned with research underlying the future capabilities of the Navy in undersea warfare and were formally presented to the Chief of Naval Operations, the Bureau Chiefs and their principal technical and scientific deputies on September 25 in the Academy Lecture Room.

Among the Academy members participating in the study were: E. L. Cochrane, W. V. Houston, C. O'D. Iselin, Donald B. Lindsley, Alfred L. Loomis, Brian O'Brien, I. I. Rabi, and Edward Teller. C. O'D. Iselin and I. A. Getting served as director and associate director of the group.

NATO ADVANCED RESEARCH FELLOWSHIPS

The Committee on International Exchange of Persons is accepting applications for a limited number of advanced research fellowships offered by the North Atlantic Treaty Organization (NATO) for 1957–58 to candidates from its member states. A candidate must be a national of a member state and must pursue his research in one or more member countries. Since NATO is especially concerned with strengthening trans-Atlantic relationships, preference will be given to those planning to work on the other side of the Atlantic.

Grants are intended for well-established scholars and candidates will be selected on the basis of their special aptitude and experience for carrying through a major research project. Preliminary screening of American candidates will be by the Committee on International Exchange of Persons, which will recommend candidates to the Department of State and the President's Board of Foreign Scholarships. Final selection of candidates will be made and announced by the NATO Selection Committee in Paris in April.

The amount of each advanced research award will be French frs. 200,000 per month (or the equivalent in the currency of any other member state in which the research project is undertaken). Grants will normally be for two to four months, but the period can be extended to not more than ten months.

Applications should be submitted no later than November 1. Application forms and additional information on the NATO Advanced Research Fellowships may be obtained from the Committee on International Exchange of Persons, National Academy of Sciences–National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

U. S. ARMY IONIZING RADIATION CENTER

The Quartermaster Research and Development Command at Natick, Mass., has obtained the assistance of the Advisory Board on Quartermaster Research and Development in considering the technical problems of its program to construct the U. S. Army Ionizing Radiation Center at an unannounced site. This facility will be used primarily for research on the radiation preservation of food. Atomic energy will be the source of power. This unique pioneering project, having profound commercial import, will be a pilot-plant, production-size facility for irradiating food with beta or gamma rays. The plant is planned to go into operation by October 1958 with a capacity of 1,000 tons a day.

The Advisory Board is furnishing advice and guidance on the technical problem involved in the selection of a site; in the consideration of contract proposals for an electron accelerator; in the evaluation of dosimetric systems employed in the irradiation of foods; in the selection of an operating contractor; and in the overall research and development program of the radiation preservation of foods for the Quartermaster Corps.

MEDICAL RESEARCH FELLOWSHIPS

The Division of Medical Sciences is accepting applications for postdoctoral research fellowships for 1957–58. All applications must be received by December 1 and the awards will be made in early spring.

The following groups of fellowships are awarded and administered by the Medical Fellowship Board of the Division:

1) *National Research Fellowships in the Medical Sciences,* supported since 1922 by the Rockefeller Foundation;

2) *Donner Fellowships for Medical Research,* made possible by a new grant from the Donner Foundation; and

3) *Markle Fellowships in the Medical Sciences,* provided through a new appropriation of the John and Mary R. Markle Foundation.

These three programs are designed to offer research experience in the basic medical sciences for persons looking forward to careers in academic medicine and investigation. Fellows are therefore expected to devote essentially their entire time to research at the fundamental level. Funds are not available for support of those who are seeking practical experience.

Awards are open to citizens of the United States and Canada who hold an M.D. or Ph.D. degree, or the equivalent. Ordinarily fellowships are not granted to persons over thirty-five years of age.

Fellowships in Radiological Research are administered for the James Picker Foundation by the Committee on Radiology. Applications will be accepted from candidates seeking to gain research skills leading to investigative careers in the field of radiology. Candidates must hold the M.D., Ph.D., or Sc.D. degree, or the equivalent and should ordinarily be not more than thirty-five years of age. Appointments are not limited to citizens of the United States.

Complete details and application blanks for any of the research fellowships listed above may be obtained from the Division of Medical Sciences, National Academy of Sciences–National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

STAFF APPOINTMENTS

The Office of Scientific Personnel announces the appointment of **Herbert Soldz,** effective October 1, to replace **Sidney Epstein,** who resigned in July to accept a position with I.B.M. in Poughkeepsie, N. Y. Mr. Soldz received his M.A. degree in social psychology and statistics from the University of Illinois and for the past two years served in the U. S. Army as an anti-aircraft battery commander.

On July 23 **George L. Wolff** was appointed a professional associate with the Institute on Animal Resources to direct the inbred mouse production program of the Institute. Dr. Wolff received his Ph.D. in mammalian genetics from the University of Chicago in 1954 and from 1954 to 1956 he was a postdoctoral fellow at the National Cancer Institute. Dr. Wolff's specialties are mammalian and physiological genetics and biochemistry.

The Materials Advisory Board announces the appointment of **Lucius Gilman** as a technical staff consultant. Dr. Gilman received his Ph.D. degree in organic chemistry from McGill University in 1936. Before coming to the Academy–Research Council he was affiliated with the I. E. du Pont de Nemours Company where he specialized on synthetic organic research and later became chief of the Army Ordnance Corps' Plastics and Adhesives Laboratory. Dr. Gilman will assist in the staff work associated with the 15 technical panels conducting a survey of the materials research which is in progress in the U. S. Department of Defense.

The Office of International Relations announces the appointment of **Laurence Evans** as Professional Assistant. He will work with the Director and Associate Director of the Office in guiding United States participation in international scientific organizations. Mr. Evans recently completed the work for his doctorate and will receive his Ph.D. in International Relations from Johns Hopkins University at the end of the current academic year. Before coming to the Academy–Research Council he was engaged in research on American relations with the Middle East for the U. S. Information Agency.

RECORD OF MEETINGS

July	
2	International Conference on Scientific Information, Planning Committee
5–6	Committee on Dispersal and Disposal of Atomic Wastes
11	Ad hoc Conference of Consultants on Potato Irradiation, *Chicago*
	Federal Construction Council, Operating Committee
	Highway Research Board, Executive Committee, *Chicago*
12	Armed Forces–National Research Council Committee on Vision, Planning Group
13	AASHO Road Test, Statistical Panel, *Chicago*
	USA National Committee, International Geophysical Year
15	Committee on Animal Nutrition, Subcommittee on Sheep Nutrition, *Reno, Nev.*
18	Food Protection Committee, Subcommittee on Toxicology
	Ad hoc Committee on Site Selection
	Food Protection Committee
19	Conference on TV Films for Direct Instruction, *New York City*
20	Prosthetics Research Board, *Detroit*
23–26	International Congress of Developmental Biology, Developmental Biology Conference Series, *Providence, R. I.*
24	Panel on Non-ferrous Metals (other than titanium)
	AASHO Road Test, Special Committee for Additional Loop, *Chicago*
25	Magnetic Material Panel
27	Panel on Titanium
	Ad hoc Committee on State Highway Finance and Taxation Studies
27–31	International Symposium on Cytodifferentiation, Developmental Biology Conference Series, *Providence, R. I.*
31	Ad hoc Committee to Evaluate Contract Proposals for an Electron Accelerator, *Chicago*
August	
1	Panel on Dielectrics
	AASHO Road Test, Bridge Panel, *Chicago*
2	Federal Construction Council, Task Group on Testing of Paints
	Manganese Panel, Working Group on Linear Programming of Manganese, *Princeton, N. J.*
2–3	Advisory Committee on Civil Defense, *Richmond, Calif.*

August	
2–4	Work Conference on Environmental Influences on Prenatal Mammalian Development, Developmental Biology Conference Series, *Bar Harbor, Me.*
6	Institute of Animal Resources, Conference on Inbred Mouse Production
	Advisory Board on Education
7	Panel on Elastomers
7–9	Work Conference on Immunology and Development, Developmental Biology Conference Series, *Bar Harbor, Me.*
10–13	Biology Council, Subcommittee on College Education, *Northeast Harbor, Me.*
14	International Conference on Scientific Information, Planning Committee
14–16	Work Conference on Physiology of Insect Development, Growth, and Metamorphosis, Developmental Biology Conference Series, *Montreal, Canada*
15	Highway Research Board, Department of Materials and Construction, Bituminous Division, *St. Louis*
	Panel on Miscellaneous Materials
16	Federal Construction Council, Task Group on Electrical Loads for Buildings
20	Institute of Animal Resources, Committee on Accreditation, Standardization, and Certification
	Committee on Mathematics Advisory to ONR, *Seattle*
21–22	Federal Construction Council, Task Group on Electrical Loads for Buildings
22–23	Committee on Aerial Delivery Research, *Natick, Mass.*
24	USA National Committee, International Astronomical Union, *Berkeley, Calif.*
25–27	Biology Council, Committee on Educational Policies, *Storrs, Conn.*
27	Committee on Preservation of Indigenous Strains of Maize, Executive Committee, *Storrs, Conn.*
27–28	Subcommittee on Beta and Gamma Ray Measurements and Standards, *Richmond, Calif.*
30	Conference of Consultants on Safety of Military Heating Equipment, *Natick, Mass.*
31	Highway Research Board, Committee on Aerial Surveys and Photogrammetry, *Columbus, Ohio*

NEW PUBLICATIONS

Antarctica in the International Geophysical Year, Based on a Symposium on the Antarctic. Co-sponsored by the U. S. National Committee for the IGY of the National Academy of Sciences, National Science Foundation, American Geophysical Union. Washington, National Academy of Sciences–National Research Council, American Geophysical Union, 1956. (National Academy of Sciences–National Research Council. Publication 462. American Geophysical Union. Geophysical Monograph No. 1.) 133 p., illus., maps. $6.00.

Bascom, Willard. *Civil Defense Against Great Fires.* Washington, National Academy of Sciences, Advisory Committee on Civil Defense, 1956. 26 p.

Bascom, Willard, *comp. U. S. Missiles, a Summary of the Information Which Has Been Released as of May 1, 1956.* Washington, National Academy of Sciences, Advisory Committee on Civil Defense, 1956. 11 p.

Conference Board of Associated Research Councils. Committee on International Exchange of Persons. *U. S. Government Awards Under the Fulbright Act. General Information, University Lecturing, Advanced Research.* Washington, 1956. 21 p.

Conference Board of Association Research Councils. Committee on International Exchange of Persons. *U. S. Government Awards Under the Fulbright and Smith-Mundt Acts. 1957–58. University Lecturing, Advanced Research. Australia, New Zealand, The Philippines, India, Burma, Thailand, Chile and Other Countries.* Washington, 1956. 29 p.

Conference Board of Associated Research Councils. Committee on International Exchange of Persons. *U. S. Government Awards Under the Fulbright and Smith-Mundt Acts. 1957–58. University Lecturing, Advanced Research. Europe, the Near East, the Far East, Africa, and Latin America.* Washington, 1956. 76 p.

Conference on Animal Standardization and Accreditation. *Proceedings.* Washington, National Academy of Sciences–National Research Council, Institute of Animal Resources, 1956. 34 p.

Conference on the Procurement of Animals from Nature. *Proceedings . . . May 21, 1956.* Washington, National Academy of Sciences–National Research Council, Institute of Animal Resources, 1956. 21 p.

Federal Construction Council. *Air Conditioning in Federal Buildings, A Summary Report by Task Group T–2 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1955. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 2.) 10 p. $1.00.

Federal Construction Council. *Climatic Data for Determining the Need for Cooling Equipment, a Reprint of Technical Report No. 12 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 9.) 25 p. $1.00.

Federal Construction Council. *Packaged Type Boilers, a Building Research Institute Revision of Technical Report No. 6 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 10.) 19 p. $1.00.

Federal Construction Council. *Pressure Drainage Systems for Buildings, a Reprint of Technical Report No. 9 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 8.) 15 p. $1.00.

Federal Construction Council. *Roof Decks and Built-up Roofing, a Report by Task Group T-12 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1955. (National Academy of Sciences–National Research Institute. Building Research Institute. Technical Reprint No. 1.) 45 p., illus. $1.00.

Federal Construction Council. *Selection of Windows, a Report by Task Group T-14 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 5.) 40 p. $1.00.

Federal Construction Council. *Self-Contained Air Conditioners, a Report by Task Group T-16 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1955. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 6.) 59 p. $1.00.

Federal Construction Council. *Space Allowances for Offices and Ceiling Heights in Office Buildings, a Report by Task Groups T-10 and T-13 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 7.) 27 p. $1.00.

Federal Construction Council. *Summaries of Two Research Reports on Plumbing Systems and Water Supply.* Washington, National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 4. 1955. 23 p. $1.00.

Federal Construction Council. *Warehouse Design, a Summary Report by Task Group T-1 . . .* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1955. (National Academy of Sciences–National Research Council. Building Research Institute. Technical Reprint No. 3.) 21 p. $1.00.

International Photobiological Congress. 1st, Amsterdam, 1954. *Proceedings of the First International Photobiological Congress (4th International Light Congress), Amsterdam, August 23–28, 1954.* Wageningen, The Netherlands, H. Veenan and Zonen, [1956]. 472 p.

Jenner, J. Slaten, *ed. Federal Civil Defense Legislation.* Washington, National Academy of Sciences, Advisory Committee on Civil Defense, 1956. 24 p.

National Academy of Sciences. Committee on Pathologic Effects of Atomic Radiation. *Report . . . from a Study of the Biological Effects of Atomic Radiation.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 452.) [213] p. $1.00.

National Research Council. Building Research Advisory Board. *A Study of Cracking of Concrete Face Brick and the Development of Data Necessary for the Establishment of Criteria for Its Manufacture and Installation.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Publication 447.) 24 p. $1.50.

National Research Council. Building Research Advisory Board. *A Study of Performance Characteristics of Domestic Heating Equipment.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Publication 444.) 38 p. $1.50.

National Research Council. Building Research Advisory Board. *A Study of Protection Against Decay and Termites in Residential Construction.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Publication 448.) 61 p. $1.50.

National Research Council. Building Research Advisory Board. *A Study of the Effect of Automatic Sequence Clothes Washing Machines on Individual Sewage Disposal Systems.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council Publication 442.) 24 p. $1.50.

National Research Council. Building Research Advisory Board. *A Study of the Installation of Wood Block Finish Flooring by Adhesive Bonding.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Publication 443.) 37 p. $1.50.

National Research Council. Building Research Advisory Board. *A Study of Vapor Barrier Materials for Use with Slab-on-Ground Construction and As Ground Cover in Crawl Spaces.* Washington, National Academy of Sciences–National Research Council, Building Research Institute, 1956. (National Academy of Sciences–National Research Council. Publication 445.) 23 p. $1.50.

National Research Council. Building Research Institute. *5th Annual Meeting, Technical Session: What's New In Plumbing.* Washington, 1956. 19 p.

National Research Council. Building Research Institute. *5th Annual Meeting, Technical Sessions on Building Products. Particle Boards: Their Manufacture and Uses, Standard Steel Buildings, Adhesives in Building.* Washington, 1956. 32 p.

National Research Council. Building Research Institute. *5th Annual Meeting, Technical Sessions on Housing. Building a New Community, What Mrs. America Wants in Tomorrow's Home, FHA's Technical Program.* Washington, 1956. 44 p.

National Research Council. Building Research Institute. Plastics Study Group. *Report of the Meeting at University of Michigan, Ann Arbor, Michigan, November 14–15, 1955.* Washington, 1956. 44 p.

National Research Council. Committee to Select Topographic Quadrangles Illustrating Cultural Geography. *Rural Settlement Patterns in the United States as Illustrated by One Hundred Topographic Quadrangle Maps.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 380.) 52 p. $1.50.

National Research Council. Highway Research Board. *Culvert-Flow Characteristics.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 413. Highway Research Board Bulletin 126.) 23 p., illus. $0.60.

National Research Council. Highway Research Board. *Flexible Culverts under High Fills.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 412. Highway Research Board Bulletin 125.) 177 p., illus. $3.30.

National Research Council. Highway Research Board. *Joint Spacing in Concrete Pavements: 10-year Reports on Six Experimental Projects.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 417. Highway Research Board. Research Report 17-B.) 159 p., illus. $2.70.

National Research Council. Highway Research Board. *Night Visibility, 1955.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 415. Highway Research Board Bulletin 127.) 65 p., illus. $1.20.

National Research Council. Highway Research Board. *Planning and Management of Roadside Vegetation; an Analysis of Principles.* Washington, 1956. (National Academy of Sciences–National Research Council. Publication 414. Highway Research Board. Special Report 23.) 48 p., illus. $1.05.

Patt, Harvey M., *ed. Basic Mechanisms in Radiobiology. IV. Cellular Aspects. Proceedings of an Informal Conference, Bear Mountain, New York, May 12–14, 1955. Harvey M. Patt and E. L. Powers, Editors.* Washington, National Academy of Sciences–National Research Council, Committee on Nuclear Science, 1956. (National Academy of Sciences–National Research Council. Publication 450. Committee on Nuclear Science. Nuclear Science Series 18.) 190 p., illus. $1.50.

Perry, Stewart E. *The Child and His Family in Disaster; a Study of the 1953 Vicksburg Tornado, by Stewart E. Perry, Earle Silber, and Donald A. Bloch.* Washington, National Academy of Sciences–National Research Council, Committee on Disaster Studies, 1956. (National Academy of Sciences–National Research Council. Publication 394. Committee on Disaster Studies. Disaster Study 5.) 62 p., illus. $1.50.

Raker, John W. *Emergency Medical Care in Disasters, a Summary of Recorded Experience . . . by John W. Raker et al.* Washington, National Academy of Sciences–National Research Council, Committee on Disaster Studies, 1956. (National Academy of Sciences–National Research Council. Publication 457. Committee on Disaster Studies. Disaster Study 6.) 75 p. $1.50.

United States National Committee for the International Geophysical Year. *Proposed United States Program for the International Geophysical Year, 1957–58. August 1956.* Washington, National Academy of Sciences–National Research Council, 1956. 109 p.

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Autumn Meeting, Washington, D. C., November 8–10, 1956

Annual Meeting, Washington, D. C., April 22–24, 1957

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., December 9, 1956

Governing Board, Washington, D. C., February 3, 1957

Governing Board, Washington, D. C., March 31, 1957

Governing Board, Washington, D. C., June 16, 1957

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